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REMARKS/ARGUMENTS

Applicants appreciate the thorough examination of the present application, as evidenced by the second Official Action. The second Official Action continues to reject Claims 1-3, 5-8, 10, 12, 36 and 37 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,763,357 to Barr. The Official Action also continues to reject Claims 9, 11 and 13- 32 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of various combinations of U.S. Patent No. 4,587,651 to Nelson et al., U.S. Patent No. 6,195,749 to Gulick, U.S. Patent No. 3,705,267 to Marino, and U.S. Patent No. 4,700,358 to Duncanson et al. In contrast to the first Official Action, however, the second Official Action now rejects Claims 33-35 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,845,472 to Buchanan et al., and rejects Claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Buchanan patent.

The second Official Action further rejects Claims 9 and 33 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. More particularly, the Official Action explains that Claim 9 introduces the expression "stack memory" but later refers to the "stack of sequential memory." The Official Action also explains that Claim 33 provides a "network controller" but later in the claim refers to a "bus controller." In response, Applicants have amended claims 9 and 33 to correct inadvertent typographical errors identified by the Official Action. In this regard, Applicants have amended dependent Claim 9 to consistently refer to "stack memory," and amended independent Claim 33 to consistently refer to a "network controller." In addition, Applicants have amended Claim 9 to further clarify that the recited RAM and stack memory are elements of the network controller, as opposed to a master network controller (amended from host computer for consistency with dependent Claim 8). Applicants note that the amendments to Claims 9 and 33 constitute non-narrowing amendments because such amendments merely correct inadvertent typographical errors, and with respect to the added amendment of Claim 9, clarify that which was already inherently recited. Applicants also respectfully submit that the rejection of Claims 9 and 33 as being indefinite is overcome.

Applicants have not amended Claims 9 or 33, or any of the other pending claims, in view of the prior art rejections. As explained below, Applicants respectfully submit that the claimed

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invention of the present application is patentably distinct from the Barr, Buchanan, Nelson, Gulick, Marino and Duncanson patents, taken individually or in combination. Applicants accordingly traverse the rejections of the claims as being anticipated by, or rendered obvious over, the Barr, Buchanan, Nelson, Gulick, Marino and Duncanson patents, individually or in combination. In view of the amendments to Claims 9 and 33, and the remarks presented herein, Applicants respectfully request reconsideration and allowance of all of the pending claims of the present application.

I. Claims 1-3, 5-8, 10, 12, 36 and 37 are Patentable over Barr

As previously explained, the Barr patent provides a method and apparatus for providing secure electronic communications between data devices over an analog communications medium between first and second locations. As disclosed, each data device includes a microprocessor controller operating under program control for determining the configuration of the message to be transmitted from one data device to the other. Each controller is coupled to a switching circuit that selects the configuration of the message to be transmitted. In this regard, the message can include characteristics that can vary, such as by the baud rate, transmission coding scheme, transmission method, parity technique, transmission technique (full or half duplex), carrier frequency and modulation technique.

A. Claims 1-3, 5-8

Independent Claim 1 of the present application provides a network controller for digitally directing communications with a plurality of remote devices via a common bus. As recited, the network controller includes a transmitter for digitally transmitting messages via the common bus, a receiver for receiving digital messages from the common bus, and a clock for providing clock signals to both the transmitter and the receiver. As also recited, both the transmitter and receiver are capable of selectively operating in either a synchronous mode or an asynchronous mode. In this regard, the transmitter transmits both messages and the clock signals via the common bus in the synchronous mode, and transmits messages at a predetermined bit rate without any accompanying clock signals via the common bus in the asynchronous mode.

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As previously explained, in contrast to the network controller of independent Claim 1, the Barr patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus, or a clock for providing clock signals to both a transmitter and a receiver of the network controller. In response to Applicants submission that the Barr patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus, the Official Action indicates that this limitation has not been given any patentable weight because it appears in the preamble of the claimed invention. The Official Action then continues by explaining that the preamble of a claim is not given patentable weight where it merely recites purpose of a process or intended use of a structure. Applicants note, however, that the Official Action fails to explain how, or to even allege that, the preamble of the instant claimed invention falls within those circumstances where the preamble is not afforded any patentable weight.

In contrast to its treatment by the Official Action, Applicants respectfully submit that the preamble of the present claims should be considered part of the claims' scope. In this regard, the preamble of the claims serves to further define the structure of the device. *See Kropa v. Robie*, 187 F.2d 150, 152, 88 U.S.P.Q. 478, 481 (C.C.P.A. 1951). "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 U.S.P.Q.2d 1161, 1165-66 (Fed. Cir. 1999). Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation. *See, e.g., Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.* 868 F.2d 1251, 1257, 9 U.S.P.Q.2d 1962, 1966 (Fed. Cir. 1989).

The prosecution of the present application resembles the prosecution described in *In re Stencel*, 828 F.2d 751, 4 U.S.P.Q.2d 1071 (Fed. Cir. 1987). In that case, the examiner did not consider the preamble as limiting the claim, but the Federal Circuit found that the preamble could not be ignored. Similarly, the Official Action in the present application has failed to consider the preamble, which sets forth the functional structure of the network controller, which together with the transmitter, receiver and clock, defines the claimed network controller. *See*

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MPEP 2173.05(g) (defining a functional limitation as "an attempt to define something by what it does, rather than what it is"); and *id.* (explaining that a functional limitation is often used in association with an element to "define a particular capability or purpose that is served by the recited element, ingredient or step").

Using similar logic as presented in *Stencel*, the framework (i.e., the teachings of the prior art), against which patentability of the present invention is measured, is not all network controllers broadly, but network controllers capable of digitally directing communications with a plurality of remote devices via a common bus. *See Id.* at 1073, 828 F.2d at 754. *See also*, MPEP § 2111.02. As further evidence of the dependence of the claimed elements on the preamble, consider that, the body of independent Claim 1, and a number of the claims depending therefrom, depend on the preamble recitations for completeness. For example, the transmitter and receiver recited by independent Claim 1 transmit and receive messages from the common bus, which is introduced in the preamble. Also, consider that Claims 4 and 8, which depend from independent Claim 1, recite further limitations of the network controller affecting the plurality of remote devices (introduced in the preamble of independent Claim 1) for which the network controller directs communications via the common bus.

Applicants therefore respectfully submit that the preamble of the present claims is more than for simply stating a purpose or intended use for the invention, and as such, should be considered when construing the patentability and scope of the present claims. Considering the recitations of the preamble of independent Claim 1, then, Applicants again respectfully submit that the Barr patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus. As previously explained, the Barr patent discloses an apparatus (i.e., composite modem) to be coupled to each end of a communications system to facilitate secure communication between devices at respective ends of the system. More particularly, the Barr patent discloses a host data device 20 and a terminal data device 100 communicating across a communications channel 45, where a composite modem is coupled to each end of the communications channel between the channel and a respective data device. *See Barr '357 Patent*, FIG. 1. The network controller 32 of independent Claim 1, on the other hand, directs communications with a plurality of remote devices 36 via a common bus 34.

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See Pat. App., FIG. 1. Should the Examiner continue to maintain that the Barr patent discloses a system whereby a network controller directs communication with a plurality of remote devices via a common bus, Applicants respectfully request the Examiner to more particularly identify those elements considered to correspond to the network controller and remote devices.

In further contrast to the claimed invention of the present application, the Barr patent does not teach or suggest a network controller including a clock for providing clock signals to both a transmitter and a receiver of the network controller. As previously explained, the Barr patent does disclose that a host microprocessor 30 of the composite modem 20 of the host digital device includes a clock. Barr '357 Patent, col. 6, ll. 6-10. In this regard, the Barr patent discloses that transmission speed or baud rate of the host digital device can be set to a fraction of the microprocessor clock. That is, the Barr patent discloses that the transmission speed can be set by dividing the microprocessor clock speed by a number entered by a program that determines the transmission characteristics, where the quotient is the transmission speed. *Id.* The Barr patent does not teach or suggest, however, any other clock, or any other function of the microprocessor clock. More particularly, the Barr patent does not teach or suggest that the microprocessor clock provides clock signals to a transmitter and a receiver of the composite modem, in a manner similar to that of independent Claim 1 of the present application.

In response to the preceding submission in response to the first Official Action, the second Official Action asserts that providing clock signals to both a transmitter and receiver, as in the claimed invention, is inherent in synchronous mode. Applicants respectfully submit, however, that at best, it is inherent in synchronous communication for the transmitter in one device to transmit a clock signal to a receiver of another device. In the Barr patent, for example, for host and terminal data devices 10, 100 to communicate in a synchronous mode, the transmitter of host data device 10 transmits a clock signal to the receiver of terminal data device 100, or vice versa. *See* Barr '357 Patent, FIG. 1. The data devices of the Barr patent can accordingly communicate in a synchronous mode with the transmitter of host data device 10 transmitting clock signals to the receiver of terminal data device 100, and transmitter of terminal data device 100 transmitting clock signals to the receiver of host data device 10. In contrast, the network controller 32 of the claimed invention includes a clock for providing clock signals to the

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transmitter 48 and receiver 48 of the same network controller, irrespective of clock signals provided from the network controller to receivers of remote devices with which the network controller directs communication. Applicants therefore respectfully submit that even if it is inherent for a clock to provide clock signals to the transmitter of one device, which in turn, provides the clock signals to the receiver of another device, it is not similarly inherent for a clock to provide clock signals to both the transmitter and receiver of the same device, as recited by the claimed invention.

Applicants therefore respectfully submit that the network controller of independent Claim 1 is patentably distinct from the method and apparatus of the Barr patent. As dependent Claims 2-9 depend, directly or indirectly, from independent Claim 1, dependent Claims 2-9 are also patentably distinct from the Barr patent, for at least the reasons given above with respect to independent Claim 1. In addition, Applicants respectfully submit that the Barr patent does not teach or suggest additional features of the claimed invention as recited by various claims depending from independent Claim 1. For example, as the Barr patent does not teach or suggest a clock for providing clock signals to a transmitter and a receiver of a network controller, the Barr patent likewise does not teach or suggest that the network controller further includes a clock transmitter for transmitting clock signals via the common bus, where the clock transmitter operates at a constant level during the asynchronous mode, as recited by dependent Claim 2.

Applicants therefore respectfully submit that the claimed invention of independent Claim 1, and by dependency Claims 2-9, is patentably distinct from the Barr patent. Thus, Applicants respectfully submit that the rejection of Claims 1-3, 5-8 under 35 U.S.C. § 102(b) as being anticipated by the Barr patent, is overcome.

B. Claims 10 and 12

Independent Claim 10 of the present application also recites a network controller for digitally directing communications with a plurality of remote devices via a common bus. As recited by independent Claim 10, the network controller includes transmitter for transmitting digital messages to the plurality of remote devices via the common bus at a predetermined bit rate. The transmitter is also capable of altering the predetermined bit rate at which messages are

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transmitted while communicating with the plurality of remote devices. The network controller also includes a receiver for receiving digital messages from the plurality of remote devices via the common bus at the same predetermined bit rate at which messages were previously transmitted to the plurality of remote devices. As such, the receiver is capable of receiving messages as the transmitter alters the predetermined bit rate without relying upon any clock signals.

In contrast to the network controller of independent Claim 10, like with the controller of independent Claim 1, the Barr patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus. Even without considering the patentable weight of the preamble of independent Claim 10, however, the Barr patent also does not teach or suggest a transmitter for transmitting messages to a plurality of remote devices, or a receiver for receiving messages from the plurality of remote devices. In this regard, as explained above, the Barr patent discloses, at best, a single network controller (e.g., host data device 10) and a single remote device (e.g., remote data device 100). The network controller of the claimed invention, on the other hand, includes a transmitter and a receiver for transmitting messages to, and receiving messages from, a plurality of remote devices.

Also in contrast to the network controller of independent Claim 10, the Barr patent does not teach or suggest a receiver for receiving digital messages at the same predetermined bit rate at which messages were previously transmitted such that the receiver is capable of receiving messages as the transmitter alters the predetermined bit rate without relying upon any clock signals. As newly cited in the second Official Action, the Barr patent discloses setting the configuration of messages, including the baud rate, for a time interval after which the configuration changes. To change from one configuration to another, the transmitting unit signals an interrupt and transmits a new configuration messages defining a different configuration. Barr '357 Patent, col. 3, l. 56 – col. 4, l. 14. The Barr patent, then, appears to disclose that all messages for a particular configuration, and thus baud rate, are transmitted and received for a time interval marked by receipt of a new configuration message. Thus, whereas a receiver of the host data device/composite modem of the Barr system would be able to receive messages from the characteristic controllers at the same bit rate that those messages were

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transmitted, the receiver would not receive messages in such a manner as the transmitter alters the bit rate. Instead, the transmitter and receiver of the host data device/composite modem is more likely to transmit and receive messages at a given bit rate for the time interval of a particular configuration, and at the conclusion of that time interval, at the bit rate of the next configuration. As explicitly disclosed by the Barr patent, "the transmission speed value for each successive time interval is calculated, under program control, to be set such that the new speed will be far enough from the old speed to prevent interception by a receiver that has not changed its reception characteristic to match." Barr '357 Patent, col. 6, ll. 16-22. Thus, the Barr patent does not teach or suggest the respective elements of the system operating across time intervals, and thus configurations and bit rates, much less that a receiver of a network controller receives messages at the same bit rate at which those messages were transmitted such that the receiver is also capable of receiving messages as the transmitter alters the bit rate.

Applicants therefore respectfully submit that the network controller of independent Claim 10 is patentably distinct from the method and apparatus of the Barr patent. As dependent Claims 11 and 12 depend from independent Claim 10, dependent Claims 11 and 12 are also patentably distinct from the Barr patent, for at least the reasons given above with respect to independent Claim 10. Thus, Applicants respectfully submit that the rejection of Claims 10 and 12 under 35 U.S.C. § 102(b) as being anticipated by the Barr patent, is overcome.

C. Claims 36 and 37

Like independent Claims 1 and 10, independent Claim 36 provides a network controller for digitally directing communications with a plurality of remote devices via a common bus. As recited, the network controller includes a transmitter for digitally transmitting messages via the common bus, and a receiver for receiving digital messages from the common bus. As also recited, the transmitter is capable of transmitting an indefinitely repeating sequence of predetermined messages via the common bus, and the receiver is capable of receiving an indefinitely repeating sequence of messages from the common bus. The network controller, in turn, is capable of altering the predetermined messages as the transmitter transmits messages and the receiver receives messages.

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Similar to independent Claims 1 and 10, and in contrast to the network controller of independent Claim 36, the Barr patent does not teach or suggest a network controller for digitally directing communication with a plurality of remote devices via a common bus, as explained above. Further, the Barr patent does not teach or suggest a network controller including a transmitter and receiver capable of transmitting and receiving, respectively, an indefinitely repeating sequence of messages from a common bus. In addition, the Barr patent does not teach or suggest the network controller being capable of altering the predetermined messages as the transmitter transmits and the receiver receives messages, as also recited by independent Claim 36. The Barr patent does disclose transmitting and receiving messages. Nowhere, however, does the Barr patent teach or suggest that those messages repeat indefinitely, or even that those messages repeat at all.

The second Official Action now cites column 4, lines 1-10 of the Barr patent as disclosing this feature of the claimed invention. Applicants respectfully submit, however, that the cited passage of the Barr patent merely discloses that, for each of a number of time durations, a transmitting unit transmits an interrupt from the previous time duration, followed by a configuration message defining a configuration of the receiving unit. The receiving unit, in turn, reconfigures itself based upon the configuration message, and for the remainder of the respective time duration, receives data in accordance with the respective configuration. The Barr patent continues by explaining that the time interval during which the configuration of messages is constant can be as long or as short as security requirements demand, and can vary from one period to the next. Even in this passage, the Barr patent at most discloses that a particular configuration of messages can last indefinitely. The Barr patent does not disclose, however, that any particular configuration specifies the transmission or reception of an indefinitely repeating sequence of messages, as recited by independent Claim 36.

Applicants therefore respectfully submit that the network controller of independent Claim 36, and by dependency Claim 37, is patentably distinct from the method and apparatus of the Barr patent. Applicants respectfully submit, then, that the rejection of Claims 36 and 37 under 35 U.S.C. § 102(b) as being anticipated by the Barr patent, is overcome.

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II. Claims 33-35 are Patentable over Buchanan

The Buchanan patent provides a data communication system employing a series loop. As disclosed, the system includes a stored program computer 7a capable of performing sequences of internally stored instructions. A loop controller 7 includes the computer and generates timed spaced multiple bit message frames for serial, time spaced communication with a plurality of remote stations 8. Each frame bit received by a remote station is immediately processed and transmitted to the next remote station. Each remote station has a frame generator responsive to failure to receive a message frame within a given time to generate frames with its own address to signal the controller of a loop break. A plurality of loop system controllers connected to a central processing unit 2 provides expanded capabilities.

Independent Claim 33 of the present application provides a network controller for digitally directing communications with a plurality of remote devices via a common bus. The network controller includes a transmitter for transmitting digital messages via the common bus, and a receiver for receiving digital messages from the common bus. As also recited, the transmitter is adapted to transmit messages comprising a command and an address of at least one remote device. In addition, the transmitter is adapted to simultaneously transmit messages to a plurality of remote devices in accordance with a group address. The group address includes a plurality of bits, each of which is associated with a respective group. As such, the group address enables the transmitter to direct a message to a group of remote devices by setting the respective bit of the group address.

In contrast to the network controller of independent Claim 33, the Buchanan patent does not teach or suggest a network controller that includes a transmitter adapted to simultaneously transmit messages to a plurality of remote devices in accordance with a group address, the group address including a plurality of bits that are each associated with a respective group such that the transmitter is enabled to direct a message to a group of remote devices by setting the respective bit of the group address. The Buchanan patent does disclose a message frame including a first byte 30 for addressing a particular remote station 8, where the first three bits 31, 32, 33 of the may be set in a particular manner to address all of the remote stations. Buchanan '472 Patent, col. 13, ll. 16-33; and FIG. 3. The Buchanan patent also discloses a second byte 36 that includes

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a number of address bits 39 for addressing a point module 16-18 of an addressed remote station 8. *Id.* at lines 47-53. In either event, however, the Buchanan patent does not teach or suggest a group address including a plurality of bits that are each associated with a respective group so that a message can be directed to a group of remote devices by setting the respective bit of the group address.

As disclosed in the specification of the present application, for example, a remote device can be associated with the group addresses 0003hex and 0002hex by storing a group mask that has a set bit representing each group address, i.e., 1100bin. In the foregoing example, additionally setting the first bit associates the remote device with the group address 0000hex, and setting the second bit associates the remote device with the group address 0001hex. The Buchanan patent, by contrast, includes a message frame generally addressing all or a particular remote station, and a point module within the addressed remote station.

Applicants therefore respectfully submit that the network controller of independent Claim 33, and by dependency Claims 34 and 35, is patentably distinct from the method and apparatus of the Buchanan patent. Applicants respectfully submit, then, that the rejection of Claims 33-35 under 35 U.S.C. § 102(b) as being anticipated by the Buchanan patent, is overcome.

III. Section 103 Rejections Generally

Before addressing the § 103(a) rejections individually, and as further explained below, Applicants respectfully note that in several instances the Official Action appears to be applying impermissible hindsight in finding motivation to combine the various cited references to disclose the claimed invention of the present application. In this regard, Applicants respectfully submit that the Court of Appeals for the Federal Circuit has stated that “[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure of a blueprint for piecing together the prior art to defeat patentability -- the essence of hindsight.” *In Re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

Although the evidence of a suggestion, teaching or motivation to combine the references commonly comes from the prior art references themselves, the suggestion, teaching or motivation can come from the knowledge of one of ordinary skill in the art or the nature of the

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problem to be solved. *Id.* In any event, the showing must be clear and particular and "[b]road conclusory statements regarding the teaching effort of multiple references, standing alone, are not 'evidence'." *Id.* Thus, Applicants respectfully submit that in many of the alleged motivations for combining various one of the cited references, one of ordinary skill in the art would not have been led to the alleged combination of elements solely from the teachings of the cited references or knowledge generally accepted in the art, either individually or in combination. Accordingly, if the Examiner continues to maintain the § 103(a) rejections considered below, Applicants respectfully requests that in all such rejections, specific passages are pointed out from the cited references that would lead one to combine the references as alleged in the Official Action.

IV. Claim 4 is Patentable over Barr and Buchanan

Dependent Claim 4 of the present application depends on independent Claim 1, and accordingly, recites a network controller for digitally directing communications with a plurality of remote devices via a common bus, where the network controller includes a transmitter, a receiver and a clock. In addition, dependent Claim 4 further recites that the network controller is capable of commanding a remote device to at least temporarily direct the communication with the other remote devices via the common bus.

As conceded by the Official Action, the Barr patent does not teach or suggest commanding a remote device to at least temporarily direct the communication with the other remote devices via the common bus, as recited by dependent Claim 4 of the present application. Nonetheless, the Official Action alleges that the Buchanan patent discloses this feature, and that it would have been obvious to combine the teachings of the Buchanan patent with the Barr system to disclose the claimed invention of dependent Claim 4. As motivation for such a modification of the Barr system, the Official Action alleges that it would "eliminate 'synchronization of clock and data signal within the remote stations' to continuously transfer signal bits and therefore, saves [sic] time and processing resources." Second Official Action, page 8.

In contrast to the allegations of the Official Action, Applicants respectfully submit that the Buchanan patent does not teach or suggest commanding a remote device to at least

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temporarily direct the communication with the other remote devices via the common bus, as recited by Claim 4. As cited by the Official Action, the Buchanan patent discloses this feature in that a remote station receives a frame, the remote station processes and responds to the bits of the frame, and then transfers either a modified or unmodified frame to the next remote station. Accordingly, there is no synchronization of clock and data signals within the loop of remote stations. Buchanan '472 Patent, col. 3, ll. 7-14. Properly interpreted, however, the remote stations of the Buchanan patent are not commanded to direct communication with other remote stations, as in the claimed invention, but are instead configured to always transfer a modified/unmodified frame to a next remote station. In this regard, each remote station 8 includes a hardware logic element 13 that analyzes each bit of a frame, and retransmits the bit unmodified or modified to the next remote station. *Id.* at col. 9, ll. 48-55. Thus, irrespective of any commands by a network controller, the logic element of each remote station analyzes each bit of a frame, and retransmits an unmodified/modified bit to the next remote station.

As recited by dependent Claim 4, on the other hand, a network controller is capable of commanding a remote device to at least temporarily direct communication with other remote devices. Thus, in accordance with the claimed invention, the network controller is capable of commanding a remote device to at least temporarily perform the function of the network controller, i.e., direct communication with remote devices (*see* Claim 1, preamble). In contrast, nowhere does the Buchanan patent even suggest that a network controller commands a remote station to perform a function of the network controller.

Moreover, even if it could be suggested that the Buchanan patent disclosed the recited feature of dependent Claim 4 (although expressly not admitted), Applicants respectfully submit that one skilled in the art would not be motivated to modify the Barr patent with teachings of the Buchanan patent to teach or suggest the claimed invention of the present application. First, as explained above, the Barr patent does not teach or suggest a network controller directing communication with a plurality of remote stations, as recited by the claimed invention. At most, the Barr patent discloses a host data device that could, for the sake of argument, correspond to a network controller, and a terminal data device that could, again for the sake of argument, correspond to a remote device. Thus, even if the host data device commanded the terminal data

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device as recited in Claim 4, the Barr system does not include any other remote devices for which the terminal data device could at least temporarily direct communication via a common bus (cf. Claim 4, "commanding a remote device to at least temporarily direct communication with other remote devices via the common bus").

Also, as disclosed, the Buchanan system is "a complete asynchronous digital transmission system" Buchanan '472 Patent, col. 15, ll. 44-46 (emphasis added). Thus, if the Barr system were modified to include remote stations configured to receive and retransmit bits of a frame, as alleged by the Official Action to disclose the feature of Claim 4, the Barr system would necessarily be modified to an asynchronous system. The modified Barr system may realize the benefit alleged by the Official Action (i.e., eliminating synchronization of clock and data signals within the remote station). However, such a modification would also eliminate the need for the host data device of the modified Barr system to include a clock for providing clock signals to the transmitter and receiver of the host data device, as recited by independent Claim 1, and by dependency Claim 4. Thus, realizing the benefit of the alleged motivation would result in elimination of a clock of the host data device, and as such, the Barr system modified by the teachings of the Buchanan patent would still not teach or suggest all of the elements of dependent Claim 4 (not including the clock of independent Claim 1, from which Claim 4 depends).

Moreover, as modifying the Barr system with the teachings of the Buchanan patent, as alleged by the Official Action, realizes an asynchronous system, such a modification would require a significant alteration of the Barr system in a manner that changes the principle of operation of the system. And as stated in MPEP § 2143.01, "[a] proposed modification cannot change the principle of operation of a reference." In this regard, the Barr system provides for an alterable configuration of a host data device and a remote data device, where the configuration is alterable between synchronous mode and asynchronous mode for the explicit purpose of providing secure communication between the devices. Modifying the system with teachings necessarily resulting in an asynchronous system, then, would require a reduction in the ability of the system to alter configuration of the communicating devices to only operate in an asynchronous mode, thereby reducing the security otherwise afforded by the Barr system.

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Applicants therefore respectfully submit that the network controller of dependent Claim 4 is patentably distinct from the method and apparatus of the Barr and Buchanan patents, taken individually or in combination. Applicants respectfully submit, then, that the rejection of Claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Buchanan patent, is overcome.

V. Claims 13-20, 22-29, 31 and 32 are Patentable over Barr and Nelson

As explained in subsection I. above, the Barr patent provides a method and apparatus for providing secure electronic communications between data devices over an analog communications medium between first and second locations. The Nelson patent, on the other hand, provides a variable bandwidth branch exchange system for interfacing a network ring to a plurality of peripheral loops that are each connected to local stations and a node on the network ring. As disclosed a node 21 on the network ring 25 can include a station interface module (SIM) 57 (see FIG. 5) coupled to a voice/data digital telephone, as shown in FIG. 13. As disclosed, the voice/data digital telephone receives, from the SIM, a biphase mark encoded data stream, biphase mark encoding being a form of Manchester encoding. The voice/data digital telephone can then process the data stream for proper operation. In this regard, the voice/data digital telephone can include a switch 241 that can be directed by a Uart 239 to apply receive data and transmit data to the Uart and not a microtelephone controller (MTC) 229, as is otherwise the case. The receive data and transmit data are then processed by the Uart and a microprocessor 237 for transmission on a packet channel, as opposed to being processed by the MTC.

Independent Claim 13 of the present application provides a method for digitally communicating between a network controller and a plurality of remote devices via a common bus. The method includes configuring the controller based upon a command protocol according to which the plurality of remote devices can communicate. In this regard, the plurality of remote devices is capable of communicating according to a command protocol selected from the group consisting of Manchester encoding and a Universal Asynchronous Receiver Transmitter (UART) protocol. In addition, the method includes transmitting messages between the bus controller and

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the plurality of remote devices according to the same command protocol with which the plurality of remote devices are capable of communicating.

In contrast to the method of independent Claim 13, and in contrast to the allegations of the Official Action, Applicants maintain neither the Barr patent nor the Nelson patent, individually or in combination, teaches or suggests configuring a network controller based upon a command protocol according to which a plurality of remote devices can communicate. As explained above, the Barr patent discloses a host data device 20 and a terminal data device 100 communicating across a communications channel 45, where a composite modem is coupled to each end of the communications channel between the channel and a respective data device. See Barr '357 Patent, FIG. 1. Considering the host data device to correspond to a network controller, and the terminal data device to correspond to a remote device, nowhere does the Barr patent teach or suggest that the host data device is configured based upon any capability of the terminal data device, much less the communication capability of the terminal data device. In accordance with the claimed invention, on the other hand, the controller is configured based upon the communication capability of the remote devices, or more particularly the command protocol according to which the remote devices are capable of communicating. Further, as explained above, the Barr patent likewise does not teach or suggest transmitting messages between the bus controller and the plurality of remote devices according to the same command protocol with which the plurality of remote devices are capable of communicating, as also recited by independent Claim 13.

Like the Barr patent, the Nelson patent also does not teach or suggest configuring a network controller based upon a command protocol according to which a plurality of remote devices can communicate. The Nelson patent does disclose a voice/data digital telephone that receives a data stream encoded with a form of Manchester encoding, where the voice/data digital telephone includes a Uart capable of receiving and transmitting data otherwise received and transmitted by a microtelephone controller (MTC). The Nelson patent does not disclose, however, that the voice/data digital telephone is capable of being configured in accordance with a command protocol selected from Manchester encoding and the UART protocol, as is the network controller of the claimed invention. In other terms, like the Barr patent, the Nelson

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patent likewise does not teach or suggest configuring any element, much less a controller, based upon the communication capabilities of the MTC or the Uart, or more particularly a command protocol according to which the MTC and Uart can communicate.

Moreover, even if the Barr and Nelson patents disclosed the features of the claimed invention as alleged by the Official Action, in spite of the Official Action's reassertions to the contrary, the motivation suggested by the Official Action for combining the Barr and Nelson patents is lacking. In this regard, the Official Action alleges it would be obvious to utilize the Manchester encoding of the Nelson patent in the Barr system because Manchester encoding allows simple synchronization with the sender and the receiver, and Barr provides for complete synchronization. Again, Applicants respectfully submit that as the Barr system is already described as providing "complete synchronization," one skilled in the art would not be motivated to modify the synchronization scheme of the Barr system to provide "complete synchronization," as alleged by the Official Action. The Official Action alleges that Manchester encoding allows "simple" synchronization with the sender and receiver. Nowhere, however, does the Official Action allege, or even suggest, that Manchester encoding has any benefit over the modulation techniques specifically disclosed by the Barr patent (i.e., AM, FSK, PM and QAM), much less that Manchester encoding allows for "simpler" synchronization than any of the specifically disclosed techniques.

With respect to the motivation to configure a network controller in accordance with the UART protocol, the Official Action explains that UARTs provide a means for parallel data (ordinary computer data) to be transmitted serially (bus), thus negating the implementation for additional, specialized hardware, and thus decreasing cost. Again, Applicants fail to recognize, however, where the Barr system transmits data in parallel, thus necessitating the use of additional, specialized and costly hardware that would otherwise be obviated by configuring the transmission of messages in accordance with the UART protocol. In this regard, Applicants respectfully submit that the Barr patent neither teaches nor suggests the drawback cited by the Official Action as driving the motivation to configure a network controller in accordance with the UART protocol. Nonetheless, should the Examiner continue to maintain that the Barr patent does somehow teach or suggest the aforementioned drawback that would otherwise be obviated

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by modifying the Barr system, Applicants respectfully request the Examiner cite particular passages of the Barr patent for this concept so that Applicants may fully consider the applicability of the Barr patent to the claimed invention.

Moreover, as previously explained, the Barr system already describes a system capable of configuring the modulation technique of communications between devices, providing, as examples, AM (amplitude modulation), FSK (frequency shift keying), PM (phase modulation) and QAM (quadrature amplitude modulation). With an already provided list of four different types of modulation, Applicants respectfully submit that if the inventor of the Barr system, presumably one skilled in the art, would have found it obvious to modulate in accordance with Manchester encoding or the UART protocol, and if either modulation technique provided such advantages as proffered by the Official Action, the Barr inventor would have included such modulation techniques as additional or alternative examples. Such a lack of including either Manchester encoding or UART protocol, Applicants respectfully submit, further evidences the fact that one skilled in the art would not be motivated to combine the teachings of the Barr and Nelson patents as alleged by the Official Action.

Applicants therefore respectfully submit that the method of independent Claim 13 is patentably distinct from the Barr and Nelson patents, taken individually or in combination. Applicants also respectfully submit that independent Claim 24 of the present application recites subject matter similar to that of independent Claim 13. In this regard, independent Claim 24 recites a network controller including a transmitter and a receiver responsive to a command protocol select command that identifies the command protocol according to which the plurality of remote devices are capable of communicating such that the transmitter and receiver operate in accordance with the identified protocol. Further, independent Claim 24 recites that the transmitter and receiver are capable of selectively operating in accordance with any command protocol selected from the group consisting from Manchester encoding and the UART protocol. Thus, Applicants respectfully submit that independent Claim 24 is patentably distinct from the Barr and Nelson patents, taken individually or in combination, for at least the same reasons given above with respect to independent Claim 13.

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Applicants therefore respectfully submit that the method and network controller of independent Claims 13 and 24, and by dependency Claims 14-23 and 25-32, are patentably distinct from the method and apparatus of the Barr and Nelson patents, taken individually or in combination. Applicants respectfully submit, then, that the rejection of Claims 13-20, 22-29, 31 and 32 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Nelson patent, is overcome.

VI. Claim 9 is Patentable over Barr and Gulick

The Gulick patent provides a computer system including a memory access controller for using non-system memory storage resources during system boot time. As disclosed, the computer system includes a microprocessor, a system memory and a plurality of peripheral devices coupled to the microprocessor through one or more buses. The system also includes a number of peripheral device controllers that contain buffer memory used by the peripheral device controllers during normal system operation to buffer data between the computer system and the peripheral devices. The computer system also includes a memory access controller and a configuration storage unit. The memory access controller controls access to the buffer memory associated with the peripheral devices during system initialization to allow use of the buffer memory as a stack or scratchpad RAM.

Amended dependent Claim 9 recites the network controller of dependent Claim 8, and thereby independent Claim 1, where the network controller includes stack memory and random access memory (RAM). As also recited, the network controller is capable of interacting with a master network controller such that the master network controller is capable of selectively accessing either the stack of sequential memory or the RAM when the network controller is acting as a remote device.

In contrast to the network controller of dependent Claim 9, neither the Barr patent nor the Gulick patent teach or suggest a network controller having stack memory and random access memory (RAM) such that when the network controller is acting as a remote device, a master network controller is capable of selectively accessing either the stack of sequential memory or the RAM. In this regard, although the Barr patent does disclose a composite modem including

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read-only (ROM) memory, nowhere does the Barr patent teach or suggest that the composite modem or any other device includes both stack memory and RAM.

As explained above, the Gulick patent does disclose a memory access controller for controlling access to the buffer memory associated with the peripheral devices. As disclosed by the Gulick patent, however, the memory access controller controls access to the buffer memory during system initialization to allow use of the buffer memory as a stack or scratchpad RAM. The Gulick patent therefore discloses that a single buffer memory is configured as either a stack or scratchpad RAM during system initialization. By contrast, the network controller of the claimed invention includes both stack memory and RAM, where the master network controller is capable of selectively accessing either type of memory. Applicants note that the second Official Action suggests that the Gulick patent discloses selectively accessing buffer memory as stack memory or RAM during initialization. In contrast, as best understood by Applicants, the Gulick patent discloses selective configuration of the buffer memory but, once configured, does not disclose selective accessing of the buffer memory as either stack memory or RAM.

Applicants do note that the Official Action failed to cite particular portions of the Gulick patent for disclosing "selective accessing" of buffer memory during initialization. Accordingly, if the Examiner maintains that the Gulick patent does disclose selectively accessing the buffer memory as either stack memory or RAM, Applicants respectfully request the Examiner cite particular portions of the Gulick patent as support so that Applicants may fully analyze the applicability of the Gulick patent to the claimed invention. Irrespective of selective access of the buffer memory, however, Applicants maintain that the Gulick patent does not disclose both stack memory and RAM, but rather discloses a buffer memory that may function as either stack memory or RAM.

Applicants therefore respectfully submit that the network controller of dependent Claim 9 is patentably distinct from the method and apparatus of the Barr and Gulick patents, taken individually or in combination, and as such, the rejection of Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Gulick patent, is overcome.

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VII. Claim 11 is Patentable over Barr and Marino

The Marino patent provides a circuit for monitoring the formation and termination of interconnections in a time-division switch. As disclosed, the circuit utilizes time-division switching for interconnecting incoming data channels to outgoing channels by means of a common time-division multiplex data bus. More particularly, the circuit monitors the formation and termination of data channel interconnections in time-division multiplex switching systems.

Dependent Claim 11, which depends on independent Claim 10 explained above in subsection 1.B., recites a network controller including a transmitter further capable of transmitting an example message to remote device(s) at an altered bit rate following alteration of the predetermined bit rate. In contrast to the network controller of independent Claim 10, and by dependency dependent Claim 11, the Barr patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus, or that the network controller includes a receiver capable of receiving messages as the transmitter alters the predetermined bit rate without relying upon any clock signals. Similarly, the Marino patent does not teach or suggest a network controller for digitally directing communications with a plurality of remote devices via a common bus, or that the network controller includes a receiver capable of receiving messages as the transmitter alters the predetermined bit rate without relying upon any clock signals, as recited by independent Claim 1 and by dependency Claim 11.

Further, as conceded by the Official Action, the Barr patent does not teach or suggest transmitting an example message to remote device(s) at an altered bit rate following alteration of the predetermined bit rate, as recited by dependent Claim 11. Likewise, and in contrast to the Official Action, the Marino patent does not teach or suggest transmitting an example message to remote device(s) at an altered bit rate following alteration of the predetermined bit rate. The first Official Action cites column 1, lines 16-19 of the Marino patent as disclosing this feature of the claimed invention (explaining that a transmission path carries data defining a sample or samples of a message signal from a channel source). Applicants respectfully submit, however, that properly interpreted, the cited passages of the Marino patent merely disclose a conventional time-division multiplexing technique whereby message signals including a plurality of samples are multiplexed over a number of time slots. The Marino patent therefore does not disclose the

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transmission of an example message, but rather the transmission of a message in a time-multiplexed manner.

Applicants therefore respectfully submit that the network controller of dependent Claim 11 is patentably distinct from the method and apparatus of the Barr and Marino patents, taken individually or in combination, and as such, the rejection of Claim 11 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Marino patent, is overcome.

VIII. Claims 21 and 30 are Patentable over Barr, Nelson and Duncanson

The Duncanson patent provides a synchronous/asynchronous modem that, as disclosed, can selectively operate in a synchronous communications mode, an asynchronous data mode, and an asynchronous command mode. As disclosed and cited in rejecting dependent Claims 21 and 30, in HDLC (high level data link control) and SDLC (synchronous data link control) modes of operation, a transmitter of a processor 47 of the modem has one of five states. Among the five states, the transmitter can operate in a mark-idle state in response to a transmitter reset command. In this regard, when the transmitter is in the mark-idle state (or flag state), the transmitter is considered idle such that the transmitter does not transmit data. More particularly, as disclosed, when the transmitter is considered idle, the transmitter holds logic 1 on an output of the processor. Duncanson '358 Patent, col. 15, ll. 37-50.

Dependent Claim 21 recites a method for digitally communicating between a network controller and a plurality of remote devices, as recited by independent Claim 13. Further, dependent Claim 21, and similarly dependent Claim 30, recites that when transmitting messages according to the UART protocol, an idle pattern is transmitted to reset the remote devices prior to transmitting each message. In contrast to the method of dependent Claim 21, none of the Barr, Nelson and Duncanson patents, individually or in combination, teach or suggest that transmitting messages according to the UART protocol includes transmitting an idle pattern to reset remote devices prior to transmitting each message. The Official Action concedes as much with respect to the Barr and Nelson patents. Nonetheless, the Official Action alleges that the Duncanson patent discloses this feature, and that it would be obvious to modify the Barr/Nelson patents to include the teachings of the Duncanson patent to disclose the claimed invention.

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As explained above, the Duncanson patent suggests that the transmitter is reset in response to a reset command, and in response to being reset, transmits an idle logic 1 pattern. In contrast, as recited by the claimed invention, a remote device is reset in response to an idle pattern, and not a reset command as in the Duncanson patent. Accordingly, whereas the transmitter of the Duncanson patent transmits an idle pattern in response to being reset, the remote device of the claimed invention is reset in response to an idle pattern. Generally, then, whereas the idle pattern of the Duncanson patent is the effect of resetting the transmitter, the idle pattern of the claimed invention is the cause of resetting the remote device.

Applicants therefore respectfully submit that the claimed invention of dependent Claims 21 and 30 is patentably distinct from the Barr, Nelson and Duncanson patents, taken individually or in combination, and as such, the rejection of Claim 21 and 30 under 35 U.S.C. § 103(a) as being unpatentable over the Barr patent in view of the Nelson patent, and further in view of the Duncanson patent, is overcome.


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CONCLUSION

In view of the amendments to the claims and the remarks presented above, Applicants respectfully submit that all of the pending claims of the present application are in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicants' undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

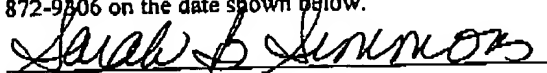
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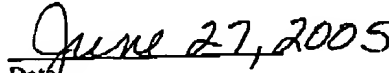

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Date June 27, 2005